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PATENT

Docket No. YOR9-2000-0273 (1963-4981)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY APPLICATION AND FEE TRANSMITTAL (1.53(b))

COMMISSIONER OF PATENTS
Box Patent Application
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

All Inventors
including Address(es): Paul Andrew Moskowitz; Anthony Levas; Stephen J. Boies; Samuel Dinkin; and Philip Shi-Lung Yu

For: **SYSTEM AND METHOD FOR PROVIDING DIRECTIONS**

Enclosed are

[X] 27 page(s) of specification, 1 page(s) of Abstract, 9 page(s) of claims

[X] 6 sheets of drawing (Figs 1, 2, 3, 4, 5, and 6) [X] formal [ ] informal (as originally filed in the parent application)

[X] 2 page(s) of Declaration and Power of Attorney
[X] Unsigned
[ ] Newly Executed
[ ] Copy from prior application

[ ] Deletion of inventors including Signed Statement under 37 C.F.R. § 1.63(d)(2)

[ ] Incorporation by Reference: The entire disclosure of the prior application, from which a copy of the combined declaration and power of attorney is supplied herein, is considered as being part of the disclosure of the accompanying application and is incorporated herein by reference.

[ ] Microfiche Computer Program (Appendix)

[ ] ___ page(s) of Sequence Listing

[ ] computer readable disk containing Sequence Listing

[ ] Statement under 37 C.F.R. § 1.821(f) that computer and paper copies of the Sequence Listing are the same

[ ] Assignment Papers (assignment cover sheet and assignment documents)

[ ] Charge Fee(s) $40.00 for recording the Assignment to Deposit Account No. 13-4500 Order No. . A DUPLICATE COPY OF THIS SHEET IS ATTACHED

Express Mail Label No EJ604718663US

[ ] Assignment papers filed in parent application Serial No. _____.

[ ] Certification of chain of title pursuant to 37 C.F.R. § 3.73(b).

[ ] Foreign priority is claimed under 35 U.S.C. § 119 from _____ Patent Application(s) No. _____ dated _____ .

[ ] Priority document(s) will be submitted at a later date.

[ ] Priority document(s) is/are submitted herewith.

[ ] Information Disclosure Statement

[ ] Copy of ___ cited references

[ ] Preliminary Amendment

[X] Return receipt postcard (MPEP 503)

[ ] This is a [ ] continuation [ ] divisional [ ] continuation-in-part (C-I-P) of prior application serial no. _____.

[ ] Cancel in this application original claims _____ of the parent application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

[ ] A preliminary Amendment is enclosed. (Claims added by this Amendment have been properly numbered consecutively beginning with the number following the highest numbered original claim in the prior application.

[ ] The status of the parent application is as follows:

[ ] A Petition For Extension of Time and a Fee therefor has been or is being filed in the parent application to extend the term for action in the parent application until _____.

[ ] A copy of the Petition for Extension of Time in the co-pending parent application is attached.

[ ] No Petition For Extension of Time and Fee therefor are necessary in the co-pending parent application.

[ ] Please abandon the parent application at a time while the parent application is pending or at a time when the petition for extension of time in that application is granted and while this application is pending has been granted a filing date, so as to make this application co-pending.

[ ] Transfer the drawing(s) from the patent application to this application.

[ ] Amend the specification by inserting before the first line the sentence:
This is a [ ] continuation [ ] divisional [ ] continuation-in-part of co-pending application Serial No._____ filed _____.

Docket No. YOR9-2000-0273 (1963-4981)

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I. CALCULATION OF APPLICATION FEE

	Number Filed		Number Extra		Rate		Basic Fee
							$690.00
Total Claims	38	-20=	18	x	$18.00		$324.00
Independent Claims	6	-3=	3	x	$78.00		$234.00
Multiple Dependent Claims		[ ] yes Additional fee	=	$260.00	$		$ -0-
		[X] no Additional fee	=	NONE			
						Total:	$1,248.00

[ ] A statement claiming small entity status is attached or has been filed in the above-identified parent application and its benefit under 37 C.F.R. § 1.28(a) is hereby claimed. Reduced fees under 37 C.F.R. § 1.9(F) (50% of total) paid herewith $ _____.

[ ] A check in the amount of $762.00 in payment of the application filing fees is attached.

[X] Charge Fee(s) to Deposit Account No. 13-4500 Order No. 1963-4981. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

[X] The Assistant Commissioner is hereby authorized to charge any additional fees which may be required for filing this application, or credit any overpayment to Deposit Account No. 13-4500, Order No. 1963-4981. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: June 14, 2000

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PATENT
Docket No. YOR9-2000-0273 (1963-4981)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	:	Paul Moskowitz, et. al.		
Serial No.	:	TBA	Group Art Unit:	TBA
Filed	:	June 14, 2000	Examiner:	TBA
For	:	**SYSTEM AND METHOD FOR PROVIDING DIRECTIONS**		

EXPRESS MAIL CERTIFICATE

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Date of Deposit June 14, 2000

COMMISSIONER OF PATENTS
Box Patent Application
Washington, D.C. 20231

Sir:

I hereby certify that the following attached paper(s) and/or fee

1. Utility Application and Fee Transmittal (1.53(b)) (in duplicate) (3 sheets);
2. 27 page(s) of Specification, 1 page(s) of Abstract, 9 page(s) of claims, 6 sheet(s) of formal drawings, 2 page(s) of Declaration and Power of Attorney; and
3. A return receipt postcard

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to the Commissioner Of Patents, Box Patent Application, Washington, D.C. 20231.

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1963-4981

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
U.S. PATENT APPLICATION

FOR:
SYSTEM AND METHOD FOR
PROVIDING DIRECTIONS

INVENTORS:
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Docket No. YOR9-2000-0273

Express Mail Label No. EJ005188546US

FIELD OF THE INVENTION

The present system and method relates to providing directions using wireless devices.

BACKGROUND OF THE INVENTION

A map is typically used as an aid in finding directions from point A to point B. However, most people do not carry maps with them in their daily travels because they can be cumbersome. Further, most people do not have maps detailing the internal particulars of buildings they enter.

A Global Positioning System (GPS) is a satellite system that transmits signals which, for civilian equipment, allows determination of a current location generally within an accuracy of +/- 20 meters. Accordingly, GPS is ineffective for directing people within a building because its accuracy renders it ineffective for directing a person from point to point within and among levels of a building structure. GPS

based systems are also inadequate in buildings because the GPS satellite signal does not penetrate buildings.

In emergencies, the problems of the above, even if they were used, are compounded by such factors as panic, the cause of the emergency and its location, and the need to move people in an orderly fashion while not interfering with the efforts of persons responding to the emergency.

Thus, there is a need for a way to assist persons in navigating within an area such as a building.

SUMMARY OF THE INVENTION

The present invention overcomes the foregoing and other problems with a system and method for directions. The present invention addresses the above problems because it can be readily updated to take into account floor plan modifications. Advantageously, the system operates independent of GPS, thereby providing operation in environments and under conditions in which satellite coverage is unavailable or is blocked by obstructions or shielding

(e.g., in buildings, urban environments, next to large obstructions, etc.).

The current system and method addresses the above problems and provides valuable advantages because it enables a person equipped with a moveable or mobile wireless communication device to communicate with a server to obtain directional information on a small scale. Such devices are able to recognize and communicate with each other or with one or more computer networks and are equipped to send and receive information. For example, when a person desires to obtain directions to an "exit" in a building, a request can be made on the communication device. The request is transmitted to a server using the wireless communication device. The server has the ability to respond to the query. The answer is transmitted to the communication device. Depending on its capabilities, the mobile communication device can either display the answer, or verbalize the answer to the person.

In one embodiment of the system and method, a server receives information identifying a current location of a

communication device having short range wireless capability. The server identifies a direction of movement to be communicated to the communication device to direct it towards a destination. The server then transmits the direction of movement to the communication device.

In a further embodiment of the system and method, a user inputs into a communication device a desired destination within a building from a current location within a building. The user receives information identifying a direction of movement within the building relative to its current location. The user then moves from the current location in the identified location of movement.

In another embodiment of the system and method, a server receives the location of an emergency event. The server then determines an evacuation route for relay to the mobile wireless communication device which transmits the information to the mobile wireless communication devices.

In a further embodiment a server tracks a path of movement of a mobile wireless communication device. If the

mobile wireless communication device veers off-course, the server re-calculates the path. The server then transmits information to update the path for the wireless communication device.

In other embodiments a server can access a map database, pre-plotted map database, or an alternate map database. In an another embodiment of the system and method, the server receives information concerning an obstruction in the path of plotted route. The server accesses the alternate map database, and recalculates the alternate route for the mobile wireless communication device.

The above advantages and features are of representative embodiments only, and are presented only to assist in understanding the invention. It should be understood that they are not to be considered limitations on the invention as defined by the claims, or limitations on equivalents to the claims. For instance, some of these advantages are mutually contradictory, in that they cannot be simultaneously present in a single embodiment. Similarly,

some advantages are applicable to one aspect of the invention, and inapplicable to others. Thus, this summary of features and advantages should not be considered dispositive in determining equivalence. Additional features and advantages of the invention will become apparent in the following description, from the drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate certain embodiments of the invention.

Figure 1 illustrates a representative arrangement employing the principles of the invention.

Figure 2 illustrates an alternative system incorporating the invention.

Figure 3 illustrates a sample embodiment of the server.

Figure 4 is a flow chart illustrating the process of tracking and recalculating of a path.

Figure 5 is a flow chart illustrating the process of informing communication devices of an emergency.

Figure 6 is a flow chart illustrating the process of recalculating a path due to a obstruction.

DETAILED DESCRIPTION

Figure 1 illustrates a representative arrangement employing the principles of the invention. A user **10** has a communication device **20** which can be, for example, a mobile device such as a cellular phone, a personal digital assistant (PDA), portable palm computing device, a portable or laptop computer, an automotive embedded computer, computing means or the like. The mobile wireless communication device **20** is equipped with short-range wireless communication capability.

In one embodiment, the wireless technology used by the mobile wireless communication device **20** employs technology described in the "Specification of the Bluetooth System" available at www.bluetooth.com incorporated herein by

reference. As shown, the Bluetooth technology is embedded in a Bluetooth chip **30** built in accordance with the specification. Bluetooth technology is a radio frequency specification for short-range, point-to-multipoint, point-to-point voice and data transfer. Software controls and identity coding built into each Bluetooth chip **30** ensures that only those units preset by their owners can communicate.

As shown, the Bluetooth technology built into the Bluetooth chip **30** operates in a globally available frequency band ensuring communication compatibility worldwide.

Bluetooth technology facilitates fast and secure transmission of both voice and data, even when the devices are not within line of sight. Its nominal link range is from 10 centimeters to 10 meters. It may be possible to extend the range to 100 meters by increasing the transmit power if permitted.

The Bluetooth technology is designed to be fully functional even in very noisy radio environments. The technology provides very high transmission rates up to about 1 Mbps. Data are protected by advanced error correction

methods, as well as encryption and authentication routines for user protection.

According to the Bluetooth specification, up to seven slave devices can be set to communicate with a master radio in one device topologically organized in a form of a piconet. Several of these piconets can be established and linked together in ad hoc scatternets to allow communication among continually flexible configurations. Generally, devices in the same piconet use priority synchronization, but other devices can enter the configuration at any time.

In other alternative embodiments, the wireless technology is built according to Infrared Data Association (IrDA) specifications, such as IrDA-Data, IrDA-Control, or the like. IrDA provides for wireless connectivity of devices that would normally use cables for connectivity. IrDA is a point-to-point, narrow angle (30 degree cone), ad-hoc data transmission standard designed to operate over a distance of 0 to 1 meter and at speeds of 9600 bps to 16 Mbps. The short-range, narrow angle of IrDA allows the user's device to communicate with another device, in a point-and-shoot style

within the range and cone coverage. The Infrared Data Association (IrDA) specifications, and standards are available at www.irda.org are incorporated herein by reference.

Figure 3 shows one variant in which there is a server **40**, a moveable or mobile wireless communication device **20**, and a fixed wireless communication device **60**. The server **40** includes a central processing unit (CPU) **80**, random access memory (RAM) **90**, read-only memory (ROM) **100**, conventional text to voice and/or voice recognition capability **110**, and a large capacity storage device **120**. As shown the server **40** stores information received from mobile wireless devices **20** or fixed wireless communication devices **60** in the large capacity storage device **120**. This information, is used to calculate various directions, as will be described in more detail below.

The central processing unit (CPU) **80** executes program code stored in one or more of RAM **90**, ROM **100** and large capacity storage device **120** in a conventional manner to carry out functions and acts described herein. CPU **80** preferably has at least one processor or microprocessor

adequate to execute program modules for calculating directions.

Large capacity storage device **120** stores one or more of a map database **140**, pre-plotted direction database **150**, or alternate direction database **160**. Further, a separate storage medium (such as a CD-ROM) may be utilized to store map image data and from which it can be read.

A direction processor **130** which is either a separate processor or part of the CPU **80** and maintains and accesses data stored in the map database **140**, the pre-plotted direction database **150**, the alternate direction database **160** and in some variants calculates directions based on the data in one or more of these databases. The server **40** calculates paths between points and can, in some cases, recalculate the path so that a device moving between a point A and a point B can have its route recalculated before point B is reached.

The map database **140** includes data from which a route between an origin and a destination can be calculated. The map database **140**, also may contain information about the

internal particulars of a building, or a geographically discrete area. Although the above listed information can be wholly within in an electronic map, it is possible to create an electronic map with only a subset of the above listed information or with other information. The present invention can access the entire map database, other networks, or any suitable subset of information to provide directions.

The pre-plotted direction database **150** is a database containing pre-plotted navigational paths between points within a structure or geographically discrete area.

Alternate direction database **160** is a database usable to adaptively calculate a route between an origin and a destination using, for example, collision avoidance techniques.

In another variant the server **40** is connected to multiple sensors. The sensors are utilized for sensing an emergency by detecting certain events exceeding a predetermined threshold and can transmit an emergency signal to the server **40**. The sensors can be positioned throughout a building or geographically discrete location, and may be

implemented so they are reconfigurable. For example, the sensors can be positioned in hallways, ventilation systems, or part of a fire detection system.

Fixed wireless communication devices **60** that communicate with moveable or mobile wireless communication devices **20** and the server **40**, can be positioned throughout the building or geographically discrete location. The fixed wireless communication devices **60** can be equipped with Bluetooth and/or Infrared Data Association (IrDA) technology to allow information to be transmitted to their desired location. For example, the fixed wireless communication devices **60** can log all the Bluetooth baseband packets that are transmitted and received within a Bluetooth piconet. The placement of the fixed wireless communication devices **60** define the Bluetooth region, according to the Bluetooth standard, so that Bluetooth equipped devices within this region can be located by the server **40** and receive location specific information.

Advantageously, although locationally fixed at any given point in time, the fixed wireless communication devices **60** are reconfigurable. For example, the fixed wireless communication devices **60** can be positioned in hallways, built into reconfigurable cubicle walls, positioned on desktops or integrated into existing hardware such as a computer such that they can be readily or inherently reconfigured when or if the floorplan changes. Depending on the capabilities of the fixed wireless communication devices **60** they can receive or display information in voice, text or graphical forms. This information is transmitted to the server **40** or a network **170**.

The Bluetooth regions defined by the fixed wireless communications devices **60** can be mixed and matched with infrared grids, motion detectors or sonic grids, for example, to identify the location of or communicate using DTMF tones with users in a building. Additionally, in some variants, cell phone networks can be utilized to augment the system and identify or communicate with users when they enter or are within a building to assist the server **40** or a network **170** in

identifying the location of users **10** in the building. These other methods of detection can be employed, for example, in areas where Bluetooth regions do not overlap.

In other variants, an orientation device such as a directional antenna, can be mounted or inserted into the moveable or mobile wireless communication device **20** to identify to the server **40** the direction in which a user **10** is holding his mobile wireless communication device **20**. The orientation device can alternatively be a separate physical unit. For example, a patch antenna of a few square inches the size of a credit card could be used and incorporated into an employee or visitor identification badge. Identification badges such as the XyLoc Key Card developed by Ensure Technologies can be utilized for this purpose. In this variant, the server **40** will be able to identify the direction the antenna is pointed and thus presume the orientation of the user. This enables mobile wireless communication devices **20** to receive directions in graphical form such as an arrow pointing in a specific direction.

Alternatively, an orientation device such as a magnetic compass can be incorporated into the mobile wireless communication device **20**. This "low tech" variant nevertheless enables the user **10** to know which direction he is facing. Thus, the server **40** could tell the user to move "north," or "south" depending on the users **10** location.

Referring back to the arrangement of figure 1, a user **10** equipped with a mobile wireless communication device **20** can communicate with a server **40** via a fixed (i.e. non-mobile) wireless communication device **60**. The user's mobile wireless communication device **20** operates according to the Bluetooth specification, for example, using a Bluetooth chip **30**. The user **10** is in a building **50** that has multiple fixed communication devices **60** each containing a Bluetooth chip **70** so as to define a Bluetooth region, representatively shown as dashed sphere X. When the user **10** has a question regarding directions to a location within the building **50**, the user **10** activates the directional feature of the mobile wireless communication device **20**. Depending on the capability of the

mobile wireless communication device **20**, he or she can input the questions either by typing a question, or by data entry through graphics or written words. Alternatively, the request can be made using the spoken word if the mobile wireless communication device **20** is equipped with voice recognition capabilities. For example, the user **10** can ask, "Where is the nearest exit?" The question is converted to data and transmitted by the Bluetooth chip **30** in the mobile wireless communication device **20** to the Bluetooth chip **70** in the fixed communication device **60**. The fixed communication device **60** acts as an interface device connected to a server **40**. In another variant of the invention the request can be transmitted directly to the server **40**. When the question is received by the server **40**, it accesses the map database **140**, employs the data received from the user **10**, and calculates the route between an origin and destination based on the users **10** location. The server **40**, transmits the answer to the Bluetooth chip **70** of the fixed communication device **60** which in turn transmits the information to the Bluetooth chip **30** in the mobile wireless communication device **20**. For example, in

figure 1, to get to Exit Y the answer provided by the server can include instructions to proceed from region A, to region B, to region C, and to Exit Y. Depending on its capabilities, the mobile wireless communication device **20** provides the answer to the user **10** in either text, graphics or voice. For example, it can display an arrow, the words "proceed forward," or say the words "go down the hallway."

Referring now to figure 2, which shows an alternative system incorporating the invention. In this arrangement, the fixed communication device **60** acts as an interface to a network **170**, although the fixed communication device **60** can be connected directly to a network **170**. The network **170** can, in turn, also be connected to a server **40**. When a query is received by the Bluetooth chip **70** in the fixed communication device **60**, the server **40**, either alone, or as connected to the computer network **170**, processes the query and prepares an answer. The server **40** transmits the answer to the Bluetooth chip **70** of the fixed communication device **60** which

in turn transmits the information to the Bluetooth chip **30** in the mobile wireless communication device **20**.

In another variant, the server **40** tracks the movement of the mobile wireless communication device **20** by receiving locational data and storing it. Therefore, when a user **10** possessing a mobile wireless communication device **20** leaves the planned route, a new route from the user's present location to the original identified location can be recalculated. For example, with respect to figure 1, assume the user **10** was provided with a previously computed route of A to B to C to Exit Y, which represents travel from region A, to region B, to region C, to Exit Y. Assume the user **10** deviates from the path by traveling from region A to region D rather than traveling from region A to region B. The user **10** may have done this by mistake, due to a blockage such as a fire or obstruction, or the user **10** may have decided to ignore the directions. Upon arrival at region D, the server **40** recalculates the user's **10** path to the destination, and transmits the directions to the user **10**.

Figure 4 is a flow chart describing the tracking and recalculating of a path, for example, in the arrangement of figure 1 or 2. When a mobile wireless communication device **20** enters a region the server **40** detects the current location of the mobile wireless communication device **20** **(step 180)**. Thereafter, movement to a new region causes a tracking system update. If the server **40** is directing the user **10** of the mobile wireless communication device **20** between two points, the server **40** continues to monitor progress of a user **10** with a mobile wireless communication device **20** from region to region **(step 190)**. If the mobile wireless communication device **20** enters one region when the mobile wireless communication device **20** was supposed to enter a different region the server **40** will determine the mobile wireless communication device **20** is off-track **(step 200)**. The server **40** accomplishes this by comparing the direction communication sent to the user **10** with the current location of the user **10**. If the mobile wireless communication device **20** is not off-track the server **40** will not transmit new directions to the user **10** **(step 210)**. If the user **10** with the mobile wireless

communication device **20** is off-track, the server **40** will calculate a new updated route for the mobile wireless communication device **20** based upon its current position **(step 220)**. The server **40** then transmits the updated information to the mobile wireless communication device **20 (step 230)**.

In another variant, the server **40** transmits information to the mobile wireless communication device **20** concerning its location in a region. The server **40** transmits updated information to the mobile wireless communication device **20** based on its location within a region. For example, in figure 1, when the mobile wireless communication device **20** enters region B after receiving directions to proceed to it from region A, the server **40** transmits updated information to the mobile wireless communication device **20**. Thus, the information is updated relative to the user's current position.

Figure 5 is a flow chart for informing communication devices of an emergency. The server **40** receives the location of an emergency event, for example, from one or more external

sensors **(step 240)**. The server **40** identifies the location of the event and stores it in the RAM **90 (step 250)**. The server **40** also determines the position of mobile wireless communication devices **20** in the building **50** by receiving location data from fixed communication devices **60 (step 260)**. The server **40** determines if the mobile wireless communication devices **20** are in a previously plotted direction **(step 270)**. If the mobile wireless communication devices **20** are in a previously plotted direction, the server **40** accesses the pre-plotted direction database **150** which contains pre-programmed paths to locations throughout an area **(step 280)**. If the server **40** accesses the pre-plotted direction database **150**, it employs the data received from the fixed communication devices **60** and compares it to the location of the event stored in RAM **90** to calculate an evacuation route **(step 290)**. The server **40** then transmits the evacuation route to the mobile wireless communication devices **20 (step 310)**. If the mobile wireless communication devices **20** are not in a previously plotted direction, the server **40** will access the map database **140** and calculate the evacuation route for the mobile wireless

communication devices **20** **(step 300)**. The server **40** transmits the evacuation route information to the mobile wireless communication devices **20** via a computer network **170** or directly **(step 310)**.

Figure 6 is a flow chart for accessing the alternate direction database **160** when an obstruction is located within a previously plotted evacuation route. The server **40** receives a request for directions from a user **10** with a mobile wireless communication device **20** **(step 320)**. The server **40** identifies the current location of the user **10** **(step 330)**. The server **40** calculates directions for the user **10** **(step 340)**. The server **40** transmits the directions to the mobile wireless communication device **20** held by the user **10** **(step 350)**. The server **40** may receive information identifying the location of an obstruction from one or more external sensors or the mobile wireless communication device **20** **(step 360)**. For example, the user **10** could transmit data to the server **40** noting that a hallway is not passable or one or more of the sensors could do so. If there is no obstruction the server **40** determines if

the user **10** is at their destination **(step 370).** If the user **10** is at their destination the sequence ends **(step 380).** However, if the user **10** is not at their destination the server **40** may transmit directions to the user **10** informing it of the obstruction **(step 350).** The server **40** identifies the location of the obstruction **(step 390).** The server **40** then compares the information regarding the obstruction to the previously plotted route for a user **10 (step 400).** If the obstruction is not within the previously plotted route the server **40** will transmit the evacuation route to the mobile wireless communication device **20** held by the user **10 (step 350).** If the obstruction is within the emergency route the server **40** accesses an alternate direction database **160 (step 410).** The server **40** employs the data received concerning the obstruction, and the location of the user **10,** to calculate a new evacuation route **(step 420).** The server **40** transmits the information to the mobile wireless communication device **20** held by the user **10 (step 350).**

In yet another variant, the server **40** calculates directions so as to avoid creating, or to reduce, people flow problems. In this variant, the server **40** has the ability to determine multiple routes for multiple mobile wireless communication devices **20**. The server **40** plots out the route for each of the mobile wireless communication devices **20** and compares them. If more than a specified number of mobile wireless communication devices **20** will converge in a region, some of the routes are recalculated as if the region had an obstruction and the routes are compared again. The process repeats at prescribed intervals, for example, when one or more mobile wireless communication devices **20** crosses from one region into another, or according to some other parameter. Advantageously, this can prevent too many mobile wireless communication devices **20** from unnecessarily proceeding to the same location at the same time during an emergency event.

The server **40** is also capable of determining if a user **10** has left a region but has not entered another region such that the user is in a "dead zone." Upon reentry into a

region the server **40** will update and retransmit directions to the user **10** based on his reentry location.

Advantageously, in some variants, the regions can be defined so that they overlap. This enables the server **40** to determine the location of a user **10** with greater precision than can be done with non-overlapping regions. If the user **10** is in the overlap region the server **40** will receive data from both regions whereas, if the user **10** is not in the overlap region, data will only be received from one region. As a result, the server **40** can provide more precise directions to a user.

It should be understood that the above description is only representative of illustrative embodiments. For the convenience of the reader, the above description has focused on a representative sample of all possible embodiments, a sample that teaches the principles of the invention. The description has not attempted to exhaustively enumerate all possible variations. That alternate embodiments may not have been presented for a specific portion of the invention, or

that further undescribed alternate embodiments may be available for a portion, is not to be considered a disclaimer of those alternate embodiments. It can be appreciated that many of those undescribed embodiments are within the literal scope of the following claims, and others are equivalent.

CLAIMS

What is claimed is:

1. A method for providing directions, comprising:

receiving information identifying a current location of a communication device having short range wireless communication capability; and

identifying a direction of movement to be communicated to the communication device to direct it towards a destination.

2. The method of claim 1, wherein the direction of movement is transmitted to the communication device.

3. The method of claim 1, wherein the transmitting is in accordance with one of a Bluetooth specification and an Infrared Data Association (IrDA) specification.

4. The method of claim 1, wherein the transmitting uses a short-range high-frequency radio signal.

5. The method of claim 1, further comprising: defining multiple regions within which the direction of movement can be detected.

6. The method of claim 1, further comprising: defining a piconet using multiple transceivers.

7. The method of claim 1, wherein the communication device is one of a cellular phone, a personal digital assistant, or a portable computer.

8. The method of claim 1, further comprising: accessing a map database.

9. The method of claim 1, further comprising: accessing a pre-plotted direction database.

10. The method of claim 1, further comprising: accessing an alternate direction database.

11. The method of claim 10, wherein accessing the alternate direction database is a result of an obstruction.

12. The method of claim 1, further comprising: receiving an identification of a location of one of an emergency event and an obstruction.

13. The method of claim 12, wherein the receiving the identification includes receiving a signal from one of a multiple of sensors.

14. The method of claim 12, wherein the receiving the identification includes receiving a signal from a network.

15. The method of claim 1, further comprising: tracking the direction of movement of the communication device relative to the destination.

16. The method of claim 15, further comprising: recording tracking information representing the movement of the communication device relative to the destination.

17. The method of claim 15, further comprising: determining whether a movement of the communication device is towards the destination.

18. The method of claim 17, wherein, when the movement is not towards the destination, the method includes providing new directions.

19. The method of claim 1, further comprising: receiving information requesting an alternate route.

20. The method of claim 19, further comprising: determining an alternate route for the communication device based on a current location.

21. The method of claim 19, further comprising: determining an alternate route based upon an intended destination.

22. The method of claim 1, further comprising: receiving adaptive route calculation information.

23. The method of claim 22, further comprising: determining the alternate route using the adaptive route calculation information so as to account for an amount of people flow towards the destination.

24. A directional method, comprising:

receiving information identifying a direction of movement within the building relative to the current location.

25. The method of claim 24, further comprising:

receiving data identifying a direction of movement sent from a fixed communication device.

26. A directional method, comprising:

inputting into a communication device a desired destination within a building from a current location within a building; and

moving from the current location in the identified direction of movement.

27. The method of claim 26, further comprising: receiving data identifying a direction of movement sent from a fixed communication device.

28. The method of claim 26, further comprising: receiving data identifying a direction of movement during an emergency toward an exit.

29. An apparatus for providing directions, comprising:

a memory;

a program stored in the memory; and

a processor in communication with the memory, and configured to execute the stored program such that the apparatus:

receives information identifying a current location of a communication device having short range wireless

communication capability; and

identifies a direction of movement to be communicated to the communication device to direct it towards a destination.

30. The apparatus of claim 29, wherein the direction of movement is transmitted to the communication device.

31. The apparatus of claim 29, wherein the device conforms with one of a Bluetooth specification and an Infrared Data Association (IrDA) specification.

32. The apparatus of claim 29, wherein the system includes a piconet.

33. The apparatus of claim 29, wherein the system includes a scatternet.

34. The apparatus of claim 29, wherein the communication device is one of a cellular phone, a personal digital assistant, or a portable computer.

35. A system of providing directions, comprising:

means for receiving information concerning an obstruction in a directional route provided to a communication device having short range wireless communication capability; and

means for determining an alternate direction of movement for the communication device to direct it towards a destination.

36. The system of claim 35, further comprising:

means for detecting an obstruction in a directional route provided to a communication device having short range wireless communication capability.

37. The system of claim 35, wherein emergency evacuation directions are provided.

38. A system of providing directions, comprising:

means for receiving information concerning an obstruction in a directional route provided to a communication device having short range wireless communication capability; and

means for determining whether a people flow problem exists.

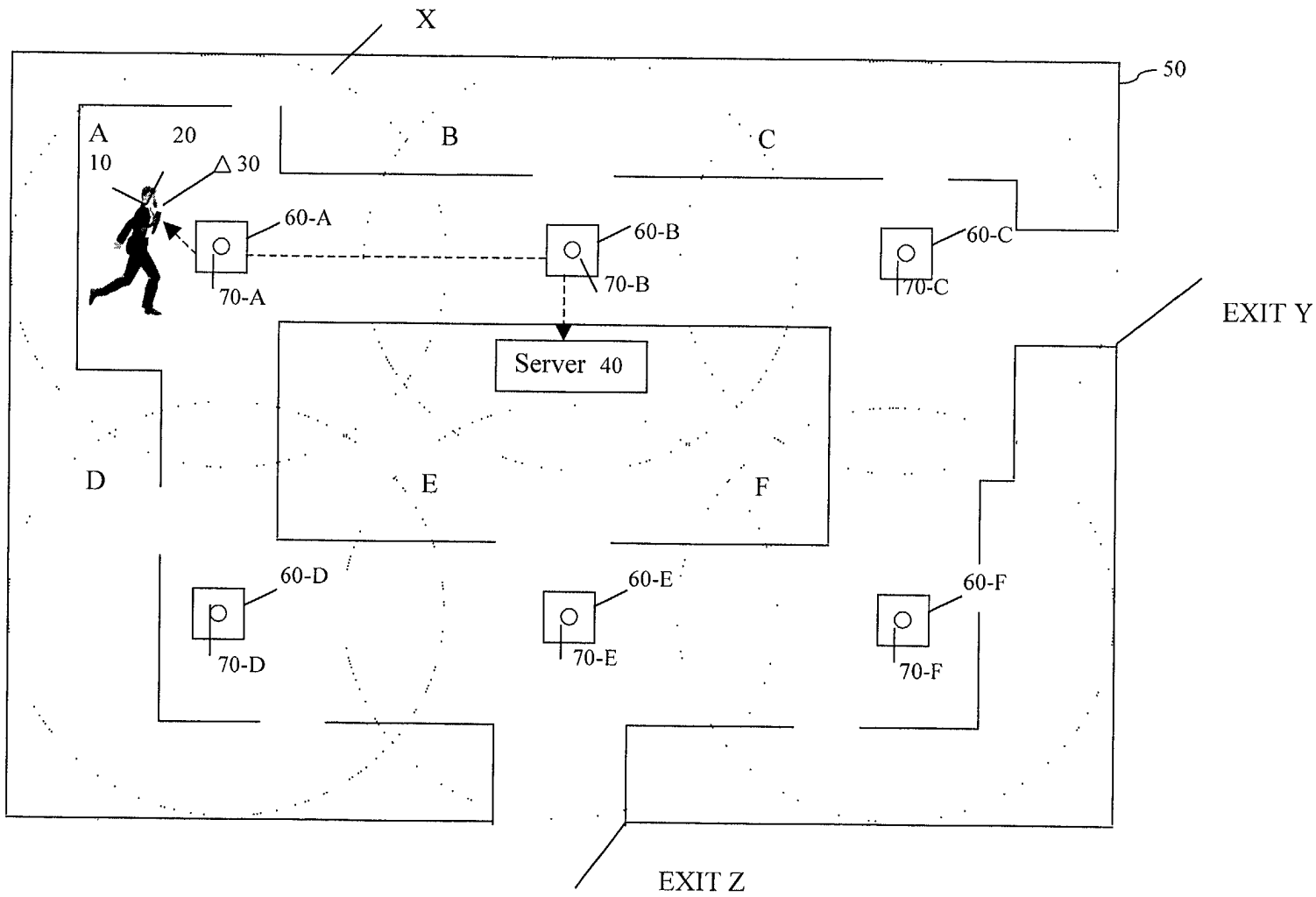
X
50
A
20
10
30
B
C
60-A
60-B
60-C
70-A
70-B
70-C
EXIT Y
Server 40
D
E
F
60-D
60-E
60-F
70-D
70-E
70-F
EXIT Z

FIG. 1

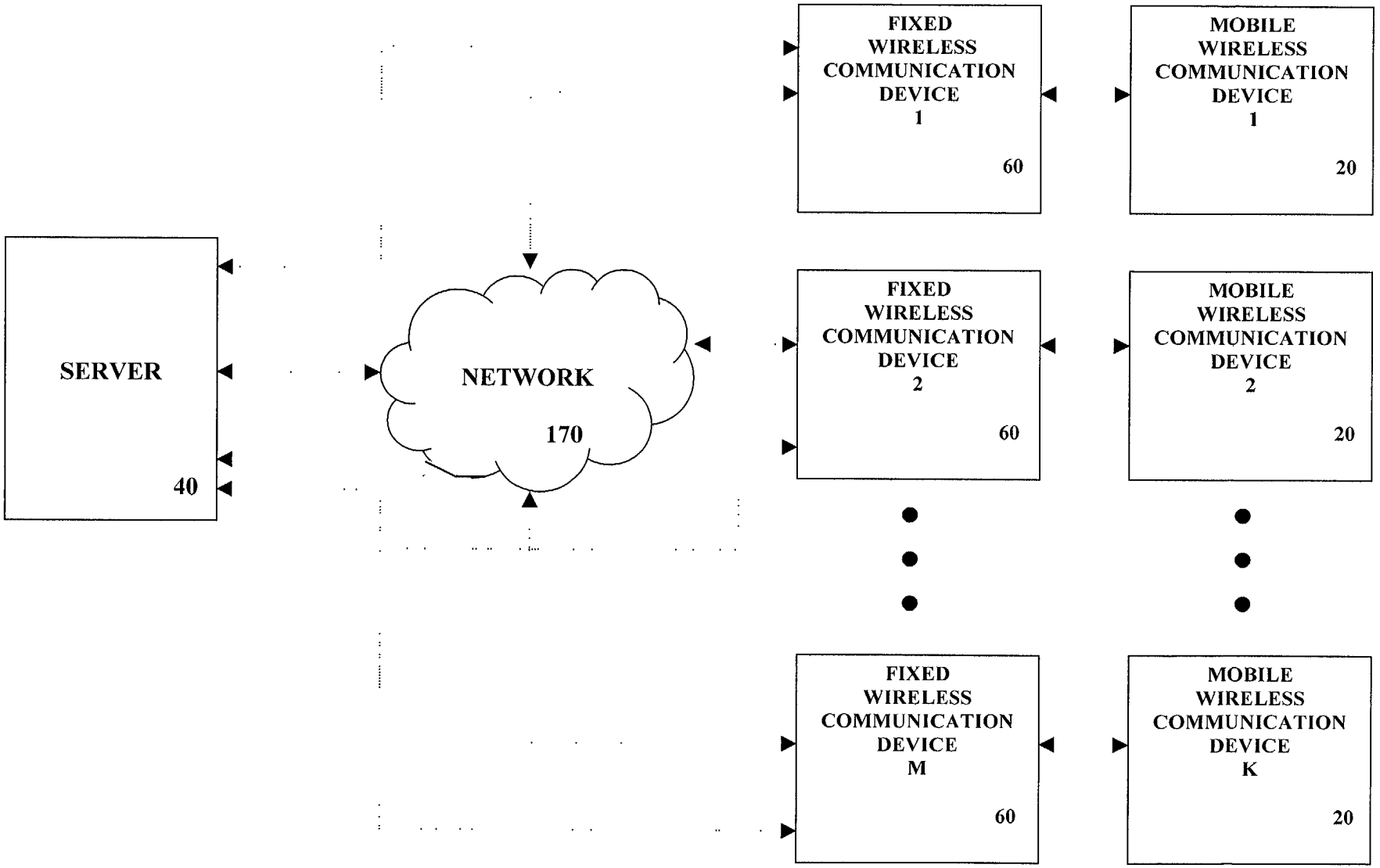
SERVER
40
NETWORK
170
FIXED WIRELESS COMMUNICATION DEVICE 1
60
MOBILE WIRELESS COMMUNICATION DEVICE 1
20
FIXED WIRELESS COMMUNICATION DEVICE 2
60
MOBILE WIRELESS COMMUNICATION DEVICE 2
20
FIXED WIRELESS COMMUNICATION DEVICE M
60
MOBILE WIRELESS COMMUNICATION DEVICE K
20

FIG. 2

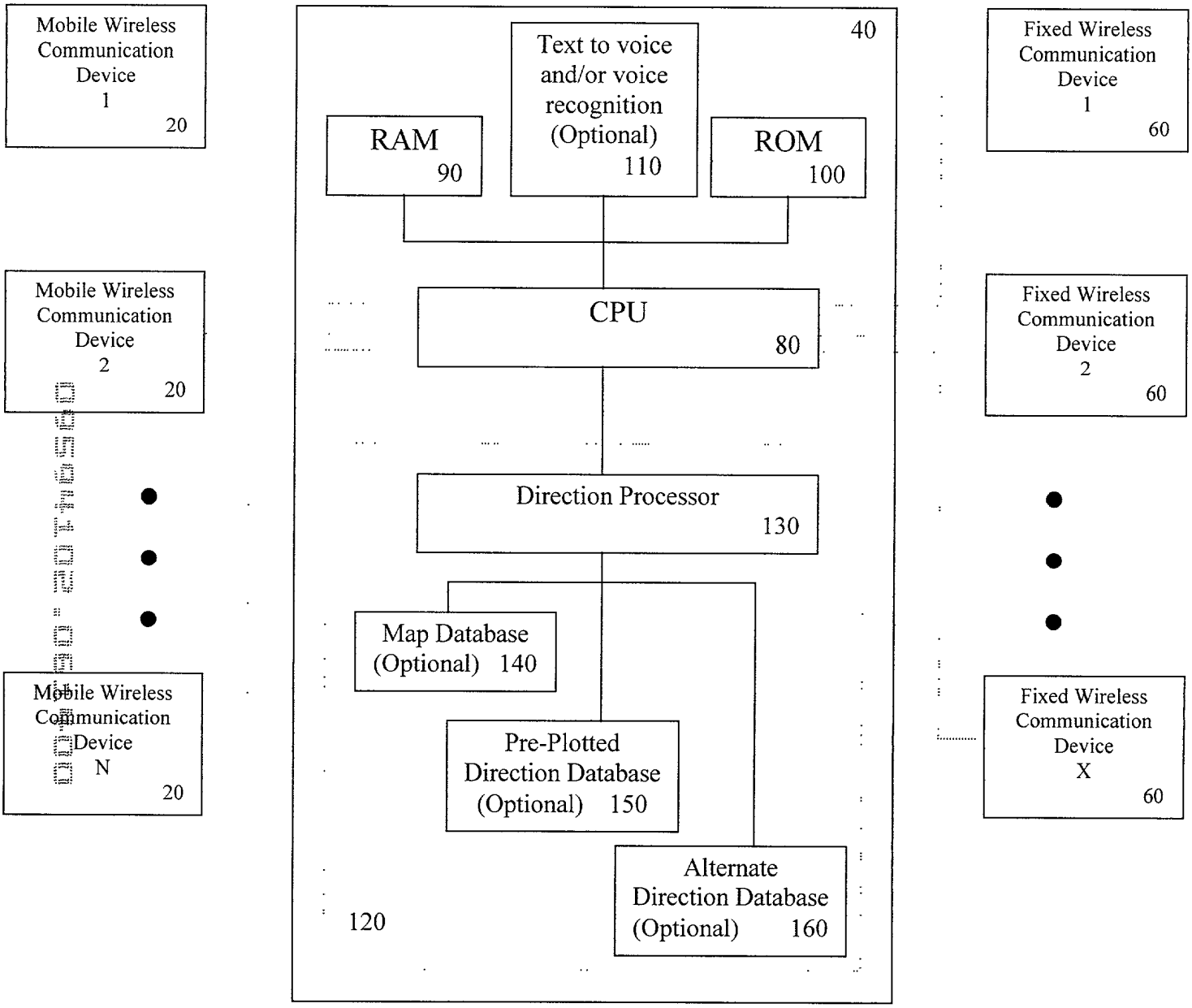
Mobile Wireless Communication Device 1 20
Mobile Wireless Communication Device 2 20
Mobile Wireless Communication Device N 20
40
Text to voice and/or voice recognition (Optional) 110
RAM 90
ROM 100
CPU 80
Direction Processor 130
Map Database (Optional) 140
Pre-Plotted Direction Database (Optional) 150
Alternate Direction Database (Optional) 160
120
Fixed Wireless Communication Device 1 60
Fixed Wireless Communication Device 2 60
Fixed Wireless Communication Device X 60

FIG. 3

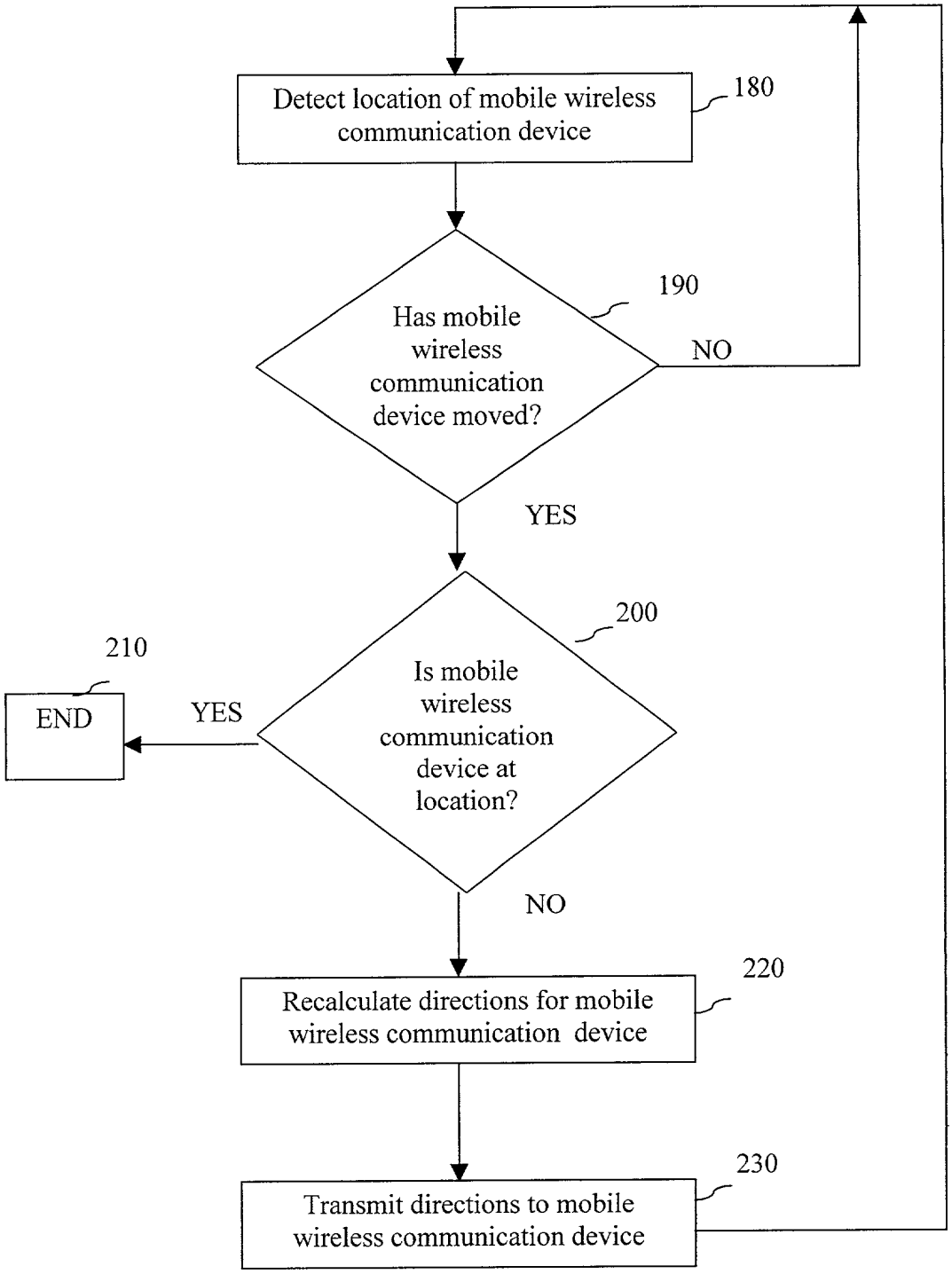

FIG. 4

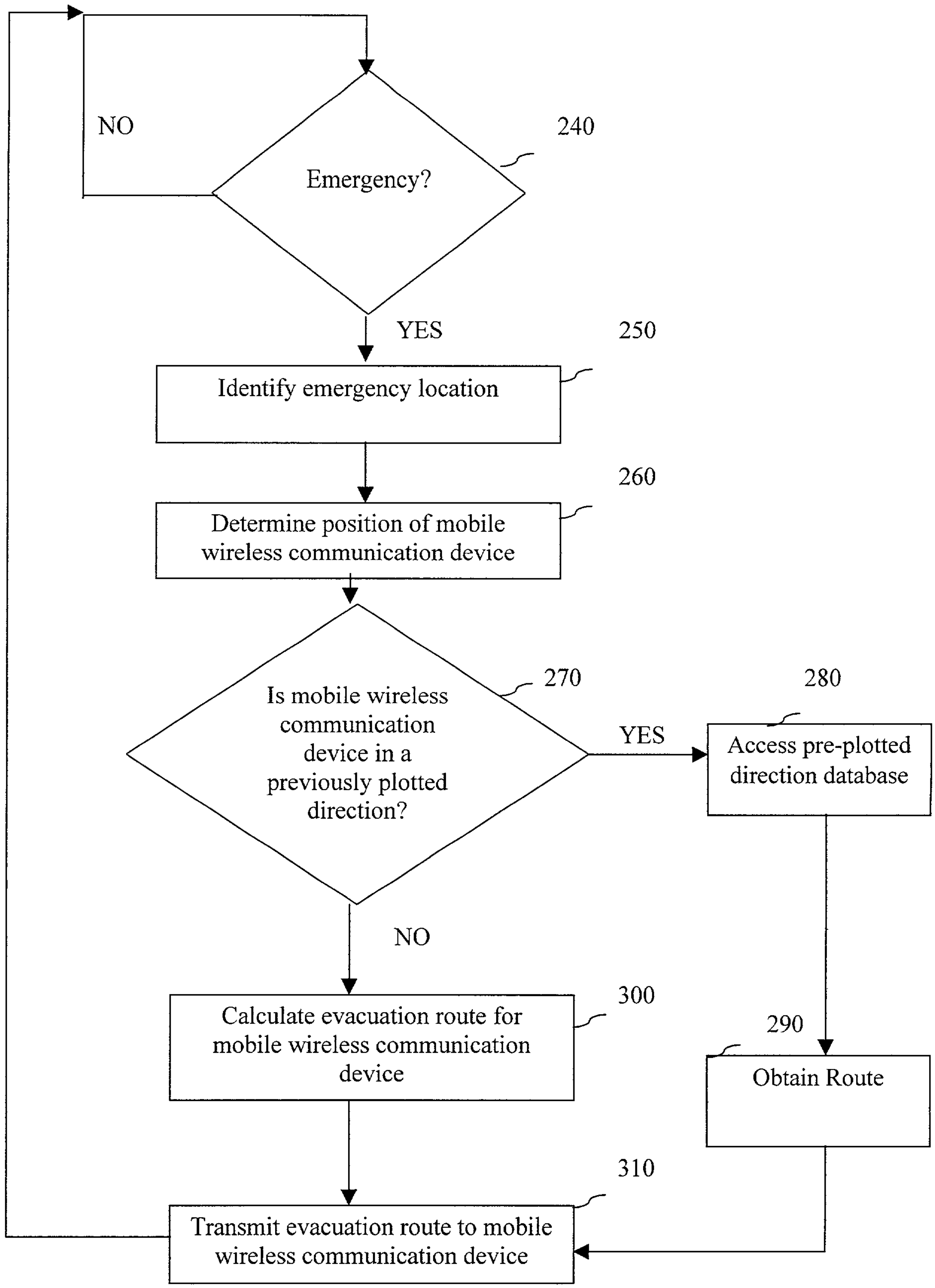

FIG. 5

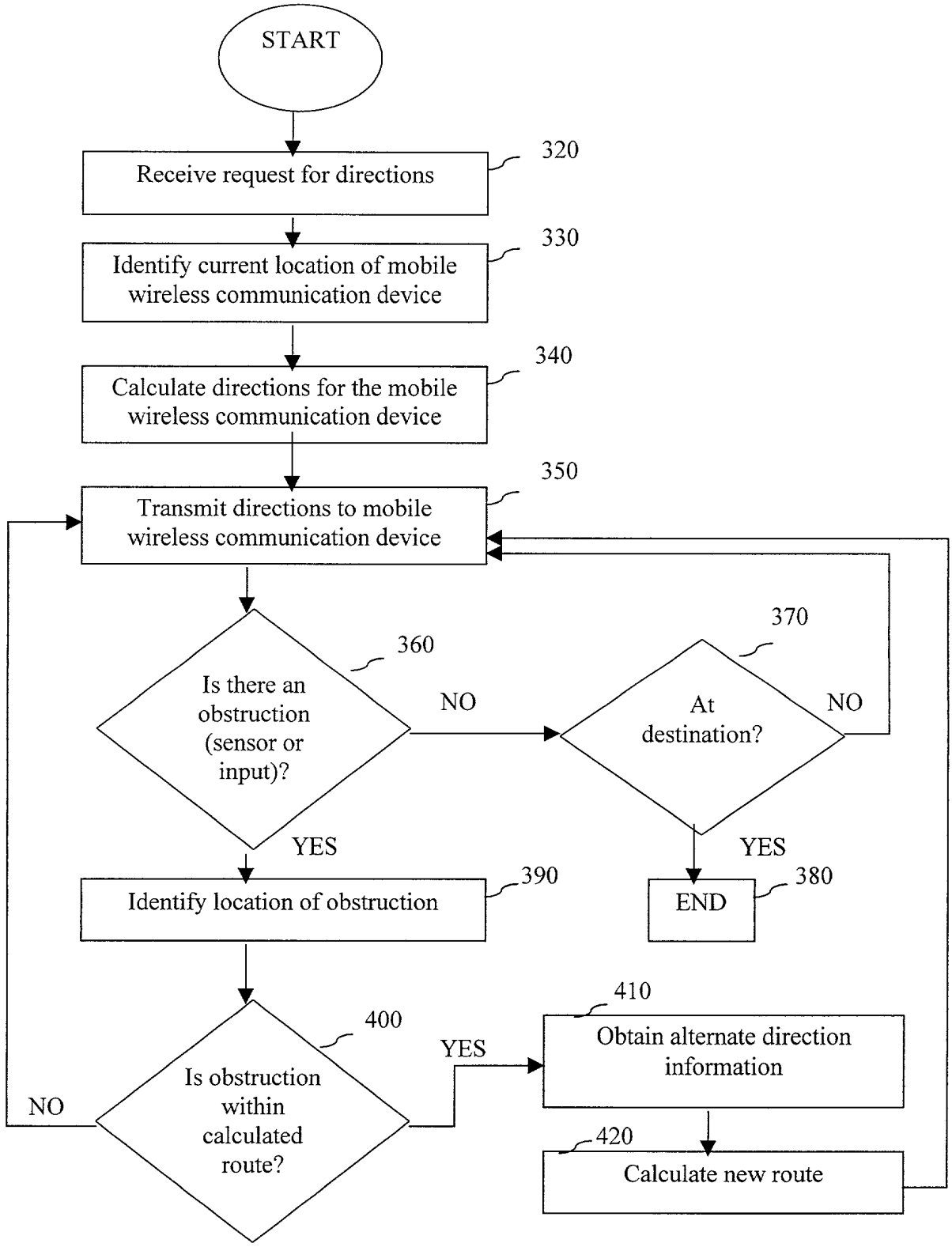
START
Receive request for directions
320
Identify current location of mobile wireless communication device
330
Calculate directions for the mobile wireless communication device
340
Transmit directions to mobile wireless communication device
350
Is there an obstruction (sensor or input)?
360
NO
At destination?
370
NO
YES
YES
Identify location of obstruction
390
END
380
Is obstruction within calculated route?
400
NO
YES
Obtain alternate direction information
410
Calculate new route
420

FIG. 6

Docket No. YOR9-2000-0273 (1963-4981)

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SYSTEM AND METHOD FOR THE PROVIDING DIRECTIONS

the specification of which (check one)

X is attached hereto.

___ was filed on _____ as United States Application Number _____

or PCT International Application Number _____

and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application, having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed
_____	_____	_____	___ Yes ___ No
(Number)	(Country)	(Day/Month/Year Filed)	
_____	_____	_____	___ Yes ___ No
(Number)	(Country)	(Day/Month/Year Filed)	
_____	_____	_____	___ Yes ___ No
(Number)	(Country)	(Day/Month/Year Filed)	

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

_____	_____
(Application Number)	(Filing Date)
_____	_____
(Application Number)	(Filing Date)

I hereby claim the benefit under 35 U.S.C. §120 of any United States Application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States, or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose information material to the patentability of this application as defined in 37 CFR §1.56 which

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